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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,847	07/12/2005	David W Mazyck	A8479	6758

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EXAMINER
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LAWRENCE JR, FRANK M

ART UNIT	PAPER NUMBER
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1724

MAIL DATE	DELIVERY MODE
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09/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/541,847	Applicant(s) MAZYCK, DAVID W	
	Examiner Frank M. Lawrence	Art Unit 1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 12 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>(2)</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 1 recites the limitation "the mercury" in line 4. There is insufficient antecedent basis for this limitation in the claim. Claims 2-16 are rejected for depending from a rejected parent claim.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3, 4, 12, 13 and 17-22 are rejected under 35 U.S.C. 102(b) as being anticipated by the International Application WO 02/24332 A1.
6. WO '332 teaches a composite adsorbent comprising a thermoplastic polymer carrier, photocatalytic particles such as titanium dioxide, activated carbon dotted or loaded on the carrier, and is optionally milled together with a magnetic substance such as magnetite (tri-iron tetroxide). The adsorbent is used for removing contaminants from air that are adsorbed and

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photodecomposed by the catalyst under irradiation via hydroxyl radicals (see p. 1, lines 5-8, p. 6, lines 14-27, p. 9, lines 16-20, p. 11, lines 11-28, p. 12, lines 15-27).

7. Claims 1, 8, 12-19 and 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by any one of Sutherland (3,803,033) or Slusarczuk et al. (4,201,831).

8. Any one of Sutherland '033 or Slusarczuk et al. '831 teaches a method of removing a contaminant from a fluid stream comprising contacting the stream with a composite of activated carbon powder and magnetite, removing the magnetized activated carbon having a contaminant adsorbed on it, and reusing the sorbent material in the process. The magnetite material is present in less than a 1:3 ratio with respect to the carbon material. (See Sutherland '033, col. 2, lines 48-54, col. 3, lines 34-42, col. 4, lines 10-17, col. 5, line 10 to col. 6, line 4; Slusarczuk '831, col. 1, lines 8-11, col. 1, line 56 to col. 2, line 2, col. 2, line 39 to col. 3, line 3, col. 4, lines 31-68).

9. Claims 1, 12-19 and 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsukamoto (4,260,523).

10. Tsukamoto '523 teaches an adsorbent for removing contaminants from a gas stream, comprising powder activated carbon mixed with magnetite and ferrite at a ratio of 2:1. The adsorbent is removed from the stream when flow stops (see abstract, claims).

11. Claims 1, 2, 8-12, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al. (2002/0124725 A1).

12. Chang et al. '725 teach a process for removing mercury from a flue gas stream comprising injecting particulate activated carbon coated on magnetic iron particles into the stream, adsorbing mercury onto the particles, removing the particles from the fluid stream, and recycling the particles back into contact with the stream. (See abstract, paragraphs 4, 16, 17).

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 14-16, 19-21 and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. '725 in view of Gadkaree et al. (6,258,334).

15. Chang et al. '725 disclose all of the limitations of the claims as discussed above except that the particles have less than a 1:3 ratio of magnetic material to carbon material, that magnetic material is a preferred iron oxide, and a photocatalyst such as tin oxide in an amount of less than about 5% by weight of the total material and catalyst. Gadkaree et al. '334 discloses a catalytic activated carbon material for removing mercury emissions from a coal-fired power plant, comprising an activated carbon sorbent having a co-catalyst such as tin oxide coated on it in an amount of less than 1% by weight of the sorbent (see col. 1, lines 22-38, col. 2, lines 32-40, col. 3, line 58 to col. 4, line 38). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the sorbent of Chang et al. '725 by including a tin oxide coating in order to provide enhanced activity to the activated carbon for adsorbing mercury. Absent a proper showing of criticality or unexpected results, the carbon to magnetic material ratio and material selection are considered to be parameters that would have been routinely optimized by one having ordinary skill in the art at the time of the invention based on material cost, availability, and efficacy.

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16. Claims 5-7, 14-16 and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO '332.

17. WO '332 discloses all of the limitations of the claims as discussed in paragraph 6 above except that the photocatalyst is present in an amount less than about 5% by weight of the composite and that the activated carbon to magnetic material ratio is less than about 3:1. Absent a proper showing of criticality or unexpected results, the carbon to magnetic material ratio and photocatalyst amount are considered to be parameters that would have been routinely optimized by one having ordinary skill in the art at the time of the invention based the desired performance of the composite and the nature and level of contamination to be removed.

#### ***Conclusion***

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The reference to Zornes (2002/0066368 A1) discloses a magneto adsorbent.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank M. Lawrence whose telephone number is 571-272-1161.

The examiner can normally be reached on Mon-Thurs 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Frank M. Lawrence  
Primary Examiner  
Art Unit 1724

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*Frank Lawrence*  
7-12-07